OMRON

Programmable Controller CPM2A-series

Replacement Guide
From CPM2A to CP1E

P084-E1-01

About this document

This document provides the reference information for replacing CPM2A PLC systems with CP1E series PLC.
This document does not include precautions and reminders ;please read and understand the important precautions and reminders described on the manuals of PLCs (both of PLC used in the existing system and PLC you will use to replace the existing PLC) before attempting to start operation.

■ Related Manuals

●CPM2A

Man.No.	Model	Manual
W352	CPM2A-□□CD□-□	CPM2A Operation Manual
W353	CPM2A-□□CD□-□	CPM1/CPM1A/CPM2A/CPM2C/SRM1(-V2) Programming Manual

●CP1E

Man.No.	Model	Manual
W479	CP1E-E□□D□-□ CP1E-N□□D□-□ CP1E-NA□□D□-□	CP1E CPU Unit Hardware User's Manual
W480	CP1E-E□□D□-□ CP1E-N□□D□-□ CP1E-NA□□D□-□	CP1E CPU Unit Software User's Manual
W483	CP1E-E□□D□-□ CP1E-N□□D□-□ CP1E-NA□□D□-□	CP1E CPU Unit Instructions Reference Manual

Read and Understand this Document

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Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the products may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

PERFORMANCE DATA

Performance data given in this manual is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

ERRORS AND OMISSIONS

The information in this manual has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

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SUITABILITY FOR USE

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At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

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- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this manual.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCTS ARE PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

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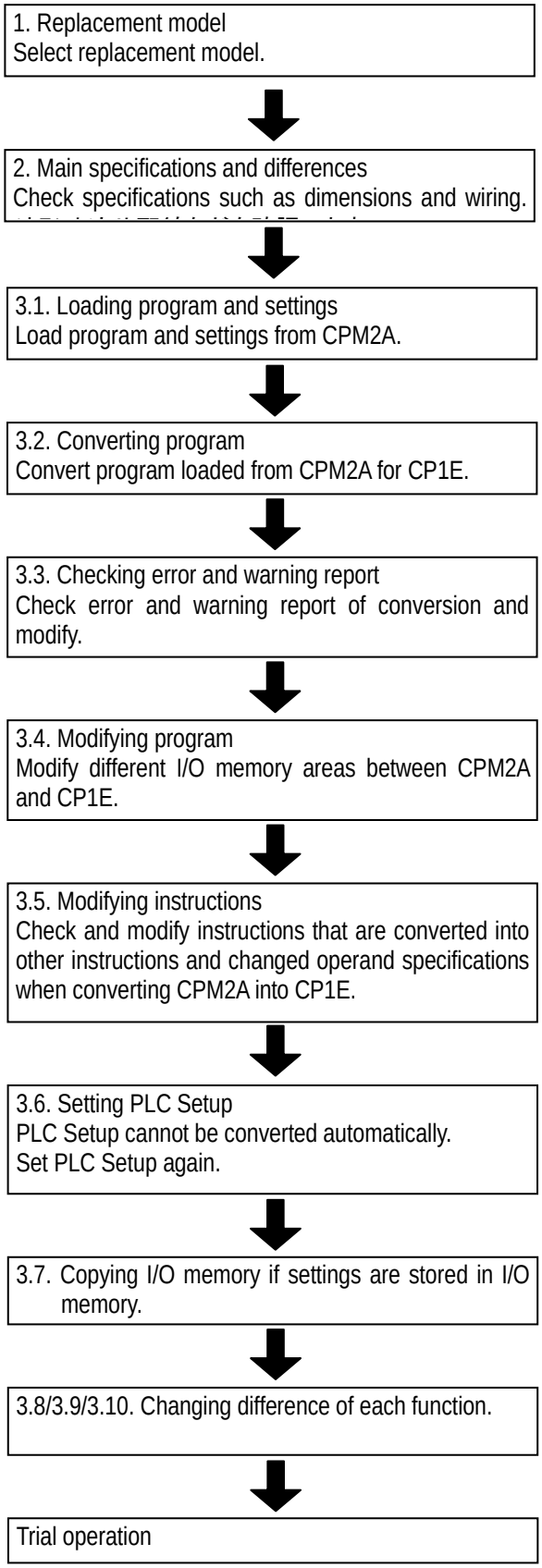
Replacement flow

The procedure to replace the CPM2A with the CP1E is as follows. (Each number shows the number of the section)



Note

After replacement, please perform trial operation before starting actual operation and check that the system operates correctly. This guide does not include sufficient specifications for replacement. Please refer to the manuals listed on the Related Manuals page and check the specifications before converting.

1. Replacement model

< Precaution for replacement >

The dimensions, specifications, program, settings, terminal arrangements and others are changed by replacing the CPM2A with the CP1E. Please refer to this replacement guide and the manuals of the CPM2A and CP1E for details.

Note:

This guide provides the procedure to replace the CPM2A with the CP1E. However, there are some differences in the functions and performance between the CPM2A and the CP1E, and all CPM2A cannot be replaced with the CP1E. Please refer to this guide and the manuals to examine replacement carefully.

Replacement configuration

Using the CPM2A CPU Unit without using a communications port (example)

CPM2A CPU Unit	➡	CP1E E-type CP1E N-type

Communications through the built-in RS-232C port of the CPM2A (example)

Using the CPM2A CPU Unit

CPM2A CPU Unit	➡	CP1E N-type (using built-in RS-232C port)

RS-232C/RS-422 communications through built-in RS-232C port and peripheral port of the CPM2A (example)

Using the CPM2A CPU Unit in combination with the CPM1-CIF01/CIF11.

CPM2A CPU Unit + CPM1-CIF11 (RS-422 Adaptor)	➡	Mount CP1W-CIF01/11/12 to CP1E N-type

Table of replacement models (example)

Power supply type	Output type	I/O points	CPM2A	CP1E E-type (without RS-232C)	CP1E N-type (built-in RS-232C type)
AC type	Relay output	20	CPM2A-20CDR-A	CP1E-E20DR-A	CP1E-N20DR-A
		30	CPM2A-30CDR-A	CP1E-E30DR-A	CP1E-N30DR-A
		40	CPM2A-40CDR-A	CP1E-E40DR-A	CP1E-N40DR-A
		60	CPM2A-60CDR-A	-	CP1E-N60DR-A
DC type	Relay output	20	CPM2A-20CDR-D	-	CP1E-N20DR-D
		30	CPM2A-30CDR-D	-	CP1E-N30DR-D
		40	CPM2A-40CDR-D	-	CP1E-N40DR-D
		60	CPM2A-60CDR-D	-	CP1E-N60DR-D
	Transistor output (sinking)	20	CPM2A-20CDT-D	-	CP1E-N20DT-D
		30	CPM2A-30CDT-D	-	CP1E-N30DT-D
		40	CPM2A-40CDT-D	-	CP1E-N40DT-D
		60	CPM2A-60CDT-D	-	CP1E-N60DT-D
	Transistor output (sourcing)	20	CPM2A-20CDT1-D	-	CP1E-N20DT1-D
		30	CPM2A-30CDT1-D	-	CP1E-N30DT1-D
		40	CPM2A-40CDT1-D	-	CP1E-N40DT1-D
		60	CPM2A-60CDT1-D	-	CP1E-N60DT1-D

2. Main specifications and differences between CP1E and CPM2A

2.1. Dimensions

The dimensions of the CP1E are different from that of the CPM2A. Secure the depth of the control panel because the depth of the CPU Unit will increase on DC type. The CPM2A with 20 I/O points is the same size as the CPM2A with 30 I/O points. Replace with the CP1E with 30 I/O points, or change the mounting dimensions.

Dimension comparison table

Power supply type	I/O	Dimensions (W x H x D)	
		CPM2A	CP1E
DC type	20 points	130 x 90 x 55	86 x 90 x 85
	30 points		130 x 90 x 85
	40 points	150 x 90 x 55	150 x 90 x 85
	60 points	195 x 90 x 55	195 x 90 x 85
AC type	20 points	130 x 90 x 90	86 x 90 x 85
	30 points		130 x 90 x 85
	40 points	150 x 90 x 90	150 x 90 x 85
	60 points	195 x 90 x 90	195 x 90 x 85

2.2. Mounting

The DIN Track and mounting hole pitch of the CP1E are the same as those of the CPM2A though the depth of all models and the width of the CPM2A with 20 I/O points are different.

2.3. Expansion Units

The Expansion Units that can be connected to the CPM2A are the CPM1A Expansion (I/O) Units, and the Expansion Units for the CP1E is the CP1W Expansion (I/O) Units. Refer to the ***Appendix 7. Expansion Units*** for the Expansion (I/O) Units to replace. An Expansion Unit cannot be connected to the CP1E with 20 I/O points.

2.4. Supply voltage

The power consumption depends on the model though the power supply voltage and operating voltage range of the CP1E and CPM2A are the same.

Change to an appropriate power supply if power supply capacity is insufficient.

Refer to the ***Appendix 1. Specification and performance comparison between CPM2A and CP1E*** for the current consumption specifications.

2.5. External power supply

The CP1E CPU Unit with 20 I/O points does not provide an external power supply.

When the CPM2A CPU Unit with 20 I/O points is replaced by the CP1E CPU Units with 20 I/O points and the external power supply is used, another 24 VDC Power Supply is required.

Power supply type	I/O	CPM2A		CP1E	
		External power supply specification	Number of Expansion (I/O) Units connected	External power supply specification	Number of Expansion (I/O) Units connected
DC type	20 points	Not provided	3 units	Not provided	Not possible
	30,40,60 points				3 units
AC type	20 points	DC24V 300mA max.	3 units	Not provided When using, another 24 VDC power supply is required.	Not possible
	30,40,60 points			DC24V 300mA max.	3 units

2.6. Wiring

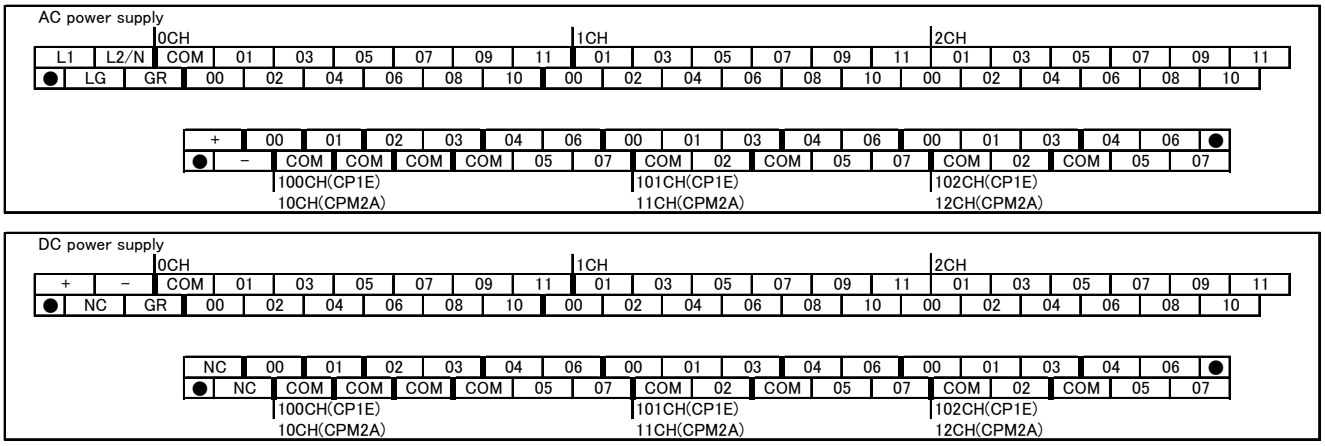
Wire to the same I/O when the I/O is used as a normal I/O.

Note: Because the terminal block of the CP1E is fixed, rewiring is required.
Review the wiring of the CPU Unit with 20 points as its terminal arrangement is changed.

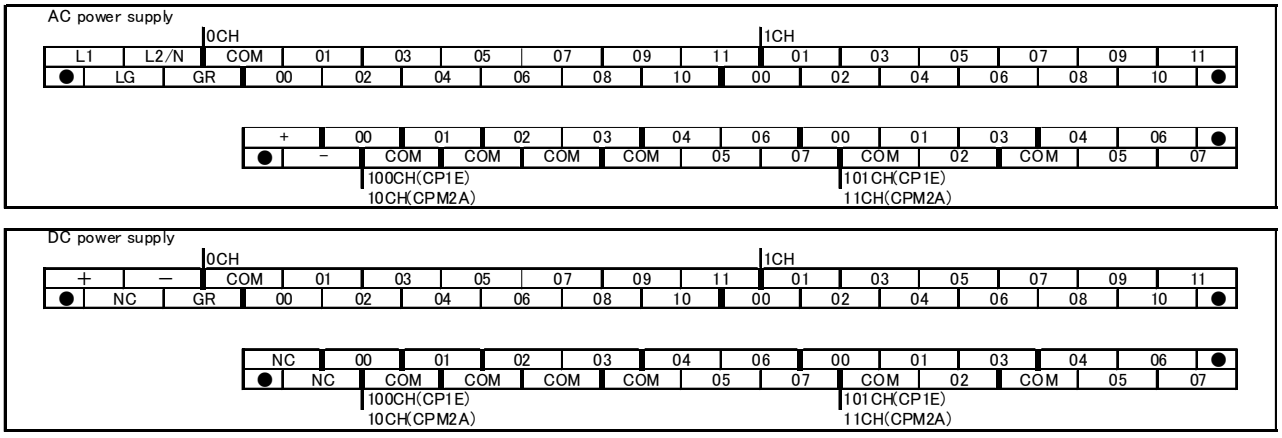
Method of terminal block and change in terminal arrangement

I/O	Terminal block		Change in terminal arangement by replacing CPM2A with CP1E
	CPM2A	CP1E	
20 points	Detachable	Fixed	Changed
30 points	Detachable	Fixed	Not changed
40 points	Detachable	Fixed	Not changed
60 points	Detachable	Fixed	Not changed

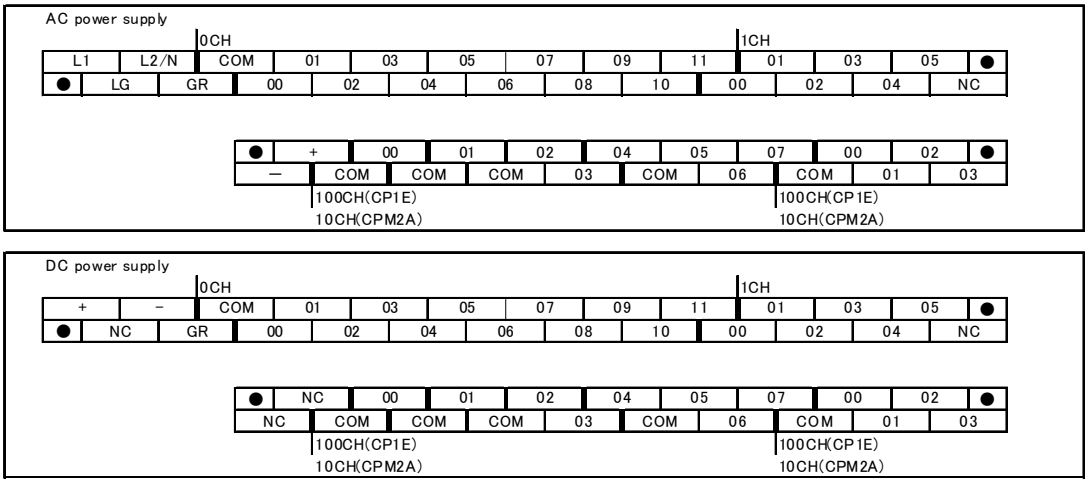
• Terminal arrangements for CPU Units with 60 I/O points



●Terminal arrangements for CPU Units with 40 I/O points

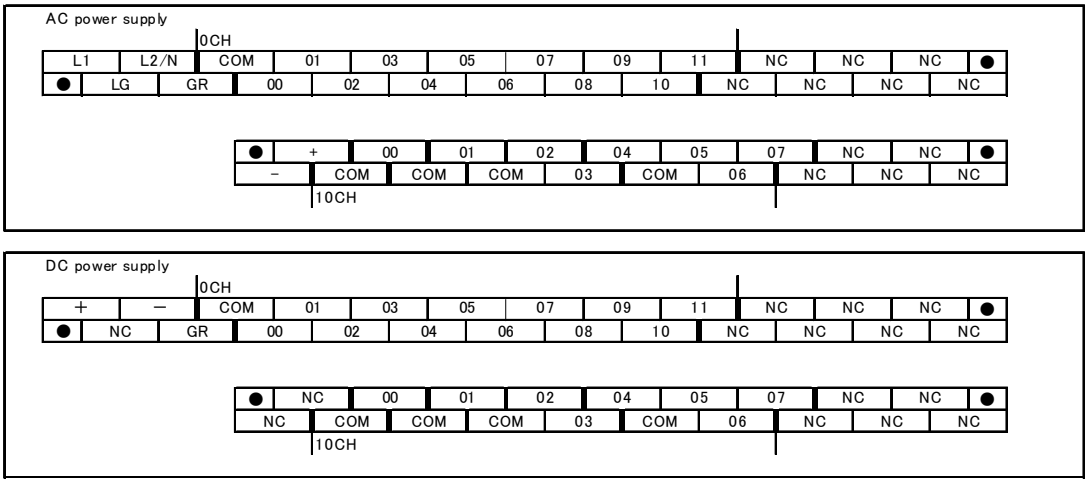


●Terminal arrangements for CPU Units with 30 I/O points

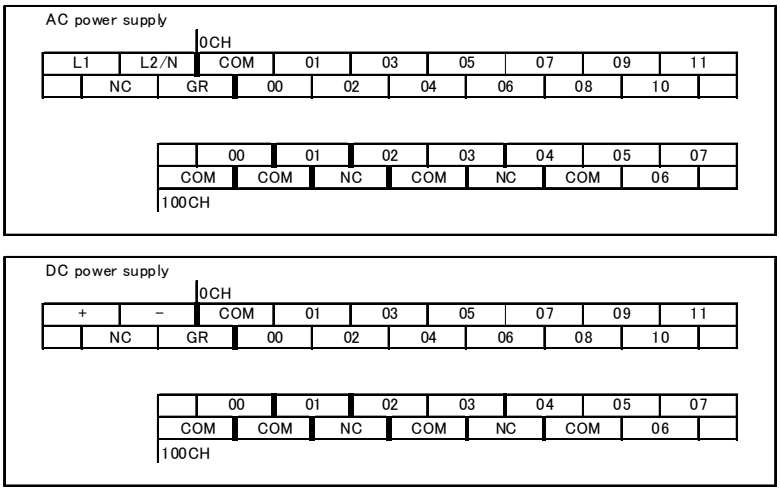


●Terminal arrangements for CPU Units with 20 I/O points

CPM2A-20D□□-□



CP1E-□20D□□-□



■ Terminal arrangements for interrupt inputs, quick-response inputs, high-speed counter inputs, and pulse outputs

Note. As for the high-speed counter input and pulse output, the functions and terminal arrangement of the CP1E might be different from those of the CPM2A. Refer to this guide and the manuals and check that necessary functions can be performed before changing the wiring and programming for replacement.

(1) Using interrupt inputs and quick-response inputs

Note. When using interrupt inputs and quick-response inputs, it is required to change ladder programs and PLC setup. Refer to the ***3.8. Converting when interrupt input is used*** and ***3.9. Converting when quick-response input is used*** to convert.

CIO	CPM2A	CP1E
0.00	-	-
0.01	-	-
0.02	-	Interrupt input 2/Quick-response input 2
0.03	Interrupt input 0/Quick-response input 0	Interrupt input 3/Quick-response input 3
0.04	Interrupt input 1/Quick-response input 1	Interrupt input 4/Quick-response input 4
0.05	Interrupt input 2/Quick-response input 2	Interrupt input 5/Quick-response input 5
0.06	Interrupt input 3/Quick-response input 3	Interrupt input 6/Quick-response input 6
0.07	-	Interrupt input 7/Quick-response input 7

(2) Using high-speed counter inputs

The terminal arrangement for high-speed counter inputs of the CPM2A is different from that of the CP1E.

- Using increment mode for CPM2A

  Use the increment pulse input for the CP1E. However, the CP1E does not support the reset input for the increment pulse input.

  When an external reset input is required in "increment mode" in the CPM2A, set to "up/down pulse input" in the CP1E, change the input from high-speed counter 0 (CIO 0.00) of the CPM2A to high-speed counter 0 up input (CIO 0.00) of the CP1E, and use reset input (CIO 0.04). In this case, connect nothing to high-speed counter 0 down input (CIO 0.01) of the CP1E.

  When CIO 0.04 of the CPM2A is used, change the input to an unused input bit of the CP1E, and change the input bit in the ladder program.

- Using differential phase or up/down mode for CPM2A

  The input bit for phase Z/reset input is changed.

  When CIO 0.04 of the CPM2A is used, change the input to CIO 0.02 of the CP1E, and change the input bit in the ladder program.

- Using pulse + direction mode for CPM2A

  The input bits for direction input and phase Z/reset input are changed.

  Change from CIO 0.01 of the CPM2A to CIO 0.02 of the CP1E for direction input.

  Change from CIO 0.02 of the CPM2A to CIO 0.04 of the CP1E for phase Z/reset input.

  When CIO 0.04 of the CPM2A is used, change the input to CIO 0.01 of the CP1E, and change the input bit in the ladder program.

Comparison of input arrangement of high-speed counter between CPM2A and CP1E

CIO	CPM2A			CP1E		
	Increment mode	Differential phase Up/down pulse	Pulse+ direction	Increment pulse	Differential phase or up/down	Pulse+ direction
0.00	High-speed counter 0	High-speed counter 0 (phase A/up input)	High-speed counter 0 (pulse)	High-speed counter 0	High-speed counter 0 (phase A/up input)	High-speed counter 0 (pulse input)
0.01	—	High-speed counter 0 (phase B/down input)	High-speed counter 0 (direction)	High-speed counter 1	High-speed counter 0 (phase B/down input)	High-speed counter 1 (pulse input)
0.02	High-speed counter 0 (phase Z/reset input)	High-speed counter 0 (phase Z/reset input)	High-speed counter 0 (phase Z/reset input)	High-speed counter 2	High-speed counter 1 (phase A/up input)	High-speed counter 0 (direction)
0.03	-	-	-	-	High-speed counter 1 (phase B/down input)	High-speed counter 1 (direction)
0.04	-	-	-	High-speed counter 3	High-speed counter 0 (phase Z/reset input)	High-speed counter 0 (reset input)
0.05	-	-	-	High-speed counter 4	High-speed counter 1 (phase Z/reset input)	High-speed counter 1 (reset input)
0.06	-	-	-	High-speed counter 5	-	-

Shaded item: Allocation of the CPM2A is different from that of the CP1E.

Grayed item: The item is not used for replacement of the CPM2A.

Note. The input that is not used as a high-speed counter of the CP1E can be used as a normal input.

(3) Using single-phase pulse (variable-duty-factor) outputs

Note. The CP1E has one PWM output.

CIO CP1E (CPM2A)	CPM2A	CP1E-N
100.00 (10.00)	PWM output 0	—
100.01 (10.01)	PWM output 1	PWM output 0

*1. The pulse output cannot be used with the CP1E-E type.

(4) Using pulse outputs

Note 1. As the CP1E does not have a single-phase pulse mode, use the pulse + direction mode when using the single-phase output in the CPM2A.
In this case, do not use a direction signal and not wire anything.

Note 2. In pulse + direction mode, allocation for the direction output is different between the CPM2A and CP1E.

Note 3. As the CP1E does not have a CW/CCW mode, change to the system that uses "pulse + direction" mode.

CIO CP1E (CPM2A)	CPM2A		CP1E-N *	
	Single-phase output	Pulse + direction CW/CCW	Single-phase output Do not use direction signal	Pulse + direction
100.00 (10.00)	Pulse output 0	Pulse output 0 (pulse /CW)	Pulse output 0 (pulse)	Pulse output 0 (pulse)
100.01 (10.01)	Pulse output 1	Pulse output 0 (Direction /CCW)	Pulse output 1 (pulse)	
100.02 (10.02)			Pulse output 0 (direction) ⇒ Do not use.	Pulse output 0 (Direction)
100.03 (10.03)			Pulse output 1 (direction) ⇒ Do not use.	

Shaded item: Output allocation is different between the CPM2A and CP1E.

*1. The pulse output cannot be used with the CP1E-E type.

3. Converting program and settings

3.1. Transferring program and settings of CPM2A

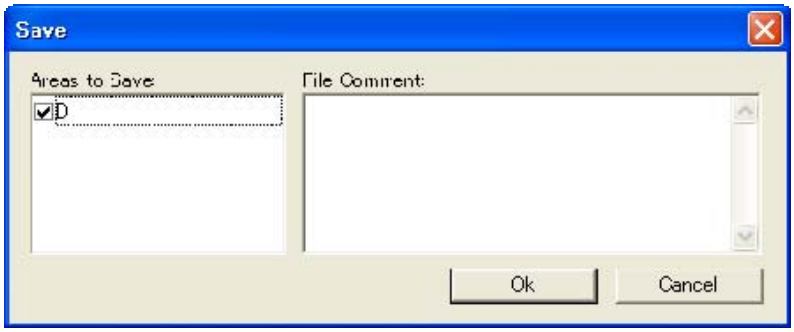
3.1.1. Transferring user program

Transfer the user program and PLC Setup ***from PLC to PC*** with the CX-Programmer, and save them.

3.1.2. Transferring Data Memory (DM)

Transfer the DM data ***from PLC to PC***, and save them.

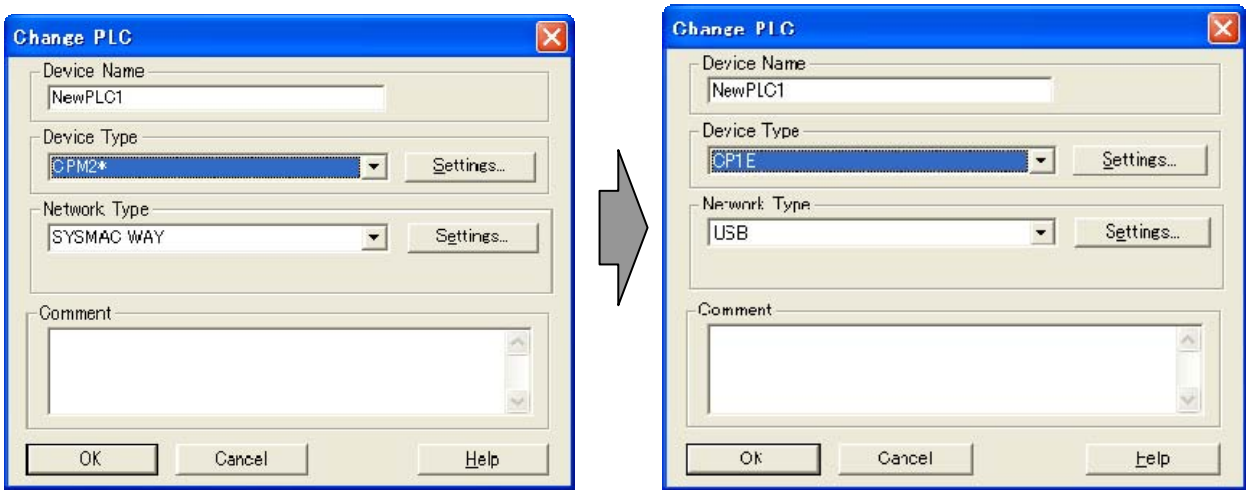
PLC memory→Open ***DM***→***File***→***Save to File***



3.2. Converting program

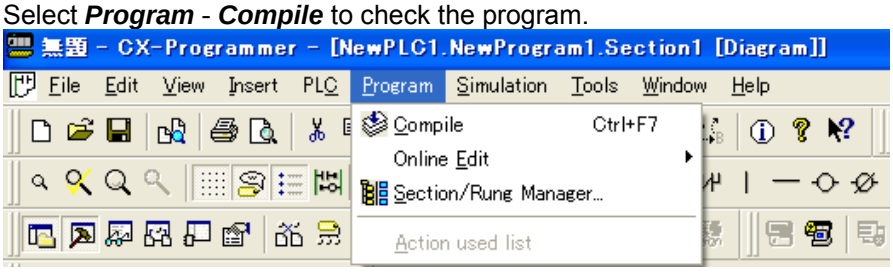
Changing the PLC

Change the Device Type of the user program for the CPM2A from "CPM2*" to "CP1E" with the CX-Programmer.

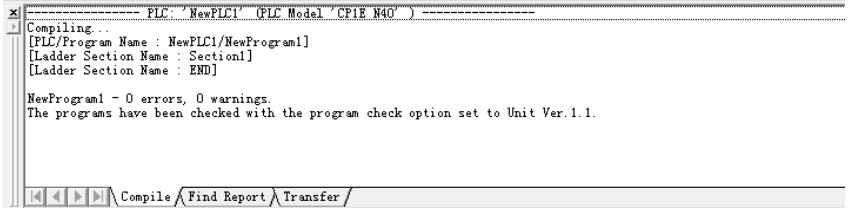


3.3. Checking error and warning report

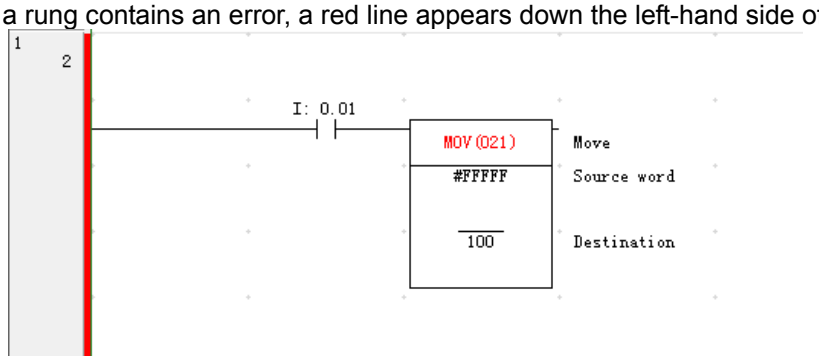
Select ***Program*** - ***Compile*** to check the program.



As the Output Window shows the errors and warnings, check them and modify the program.



If a rung contains an error, a red line appears down the left-hand side of the ladder rung.



Compile can check the following contents.

- Illegal data
- Instruction support by PLC
- Operand ranges
- Program capacity for PLC
- Syntax
- Ladder diagram structure
- Output duplication
- Tasks

Note. Some errors might not be detected by the above-mentioned check with ***Compile***.
Check the entire program to operate the system correctly after checking and modifying the contents in ***3.4. Modifying program*** and other sections.

3.4. Modifying program

3.4.1. Modifying I/O memory area

(1) CIO Area

Some I/O memory areas might be required to be changed.

If the address that does not exist in the CP1E is specified, an error will be displayed as a rung error in the Output Window of the CX-Programmer when converted. (The error instruction is displayed in red on the Ladder Program Window.)

Changing allocation of output bits

The output bits must be modified because the output bits of the CPM2A starting from CIO 10 changed to those of the CP1E starting from CIO 100.

	CPM2A	CP1E
Output bits	CIO 10	CIO 100
	CIO 11	CIO 101
	...	...
	CIO 19	CIO 119

Example: CPU Unit with 40 I/O points
CPM2A : 010.00 to 010.07, 011.00 to 011.07 (starting from CIO10)
CP1E : 100.00 to 100.07, 101.00 to 101.07 (starting from CIO100)

The allocation of input bits does not need to be changed.

Refer to the ***I/O memory*** of the ***Appendix 1. Specification and performance comparison between CPM2A and CP1E*** for the range of the CIO Area.

3.4.2. Allocations of Auxiliary Area and Special Area

Some bits and functions in the Auxiliary Area of the CP1E are different from those in the Auxiliary Area and Special Area of the CPM2A. The allocations of the Auxiliary Area and Special Area are not displayed as errors when converted. Refer to the Appendices 2 and 3, and reference manuals to change the bits and ladder program.

Note. The Special Area of the CPM2A is included in the Auxiliary Area in the CP1E.

Refer to the ***Appendix 2. Changes in Special Area*** for the difference of the Special Area.
Refer to the ***Appendix 3. Changes in Auxiliary Area*** for the difference of the Auxiliary Area.

3.4.3. Allocation of Link Words

Although the allocations of the Link Words of the CPM1A and the CP2E are different, the CX-Programmer does not convert. The Link Words are converted into the Work Area (W) for the CP1E as follows. If you use Serial Links with the CP1E, modify the Link Words to the Serial PLC Link Words of the CP1E.

	Link Words of CPM2A	When converted with CX-Programmer	Serial PLC Link Words of CP1E
Link Words (CPM2A) Serial PLC Link Words (CP1E)	LR0 to LR15	W0 to W15	CIO 200 to CIO 289

3.5. Modifying instructions

3.5.1. Converting instructions that are changed to different instructions for CP1E

Some of the CPM2A instructions are changed to different instructions for the CP1E when converted.

Refer to the Instructions Reference Manuals in the reference manuals to modify the instructions for operations of the system.

Some instructions that exist in the CPM2A do not exist in the CP1E.

Modify or add the ladder program so that the system may work correctly by other methods.

Refer to the ***Appendix 4. Instructions changed by replacing CPM2A with CP1E*** for the instructions to be modified.

3.5.2. Modifying the CPM2A instructions that include changes of the operand specifications

Some operand specifications of instructions that are supported by the CPM2A are changed for the CP1E.

Refer to the Instructions Reference Manual in the reference manuals to modify the operands for operations of the system. Review modified operands and all parts using the I/O memory that is used for the operands of the modified instructions, and check if operations are performed correctly.

Refer to the ***Appendix 5. Instruction specifications changed by replacing CPM2A with CP1E*** for the instructions changed the specifications and their details.

3.6. PLC Setup

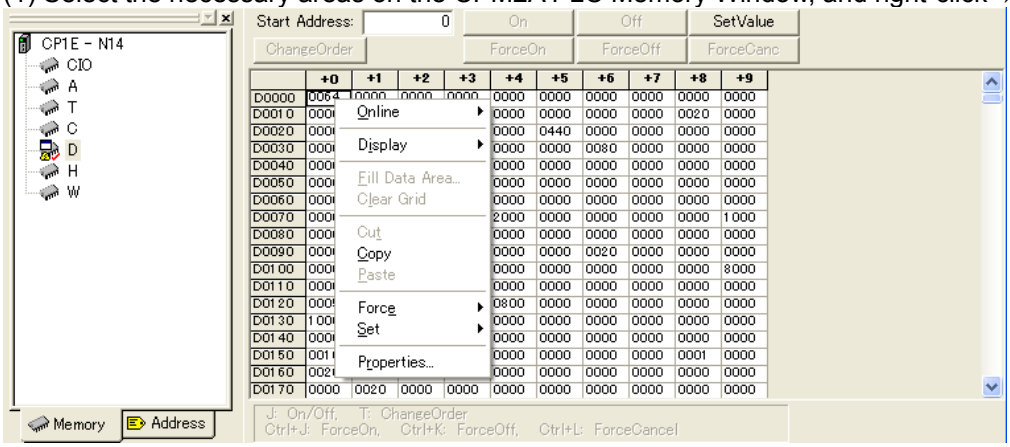
The PLC Setup is not converted though the ladder program is converted by Change Model. The PLC Setup settings of the CP1E must be changed. Refer to the ***Appendix 6. PLC Setup changed by replacing CPM2A with CP1E*** for the difference in the PLC Setup between the CPM2A and the CP1E.

3.7. I/O memory

When the data for the ladder program is set in the I/O memory (DM Area and Holding Area) of the CPM2A, it is necessary to copy it to the I/O memory area of the CP1E.

Open the screen of the PLC memory of the CPM2A, copy necessary data, and paste it onto the I/O memory of the CP1E.

(1) Select the necessary areas on the CPM2A PLC Memory Window, and right-click→***Copy***



(2)Open the PLC Memory Window of the CP1E, and paste the areas.

3.8. Converting when interrupt input is used

When the interrupt input is used, it is necessary to change the ladder program and PLC Setup settings.
The interrupt program operates in subroutine of the CPM2A and in the interrupt task of the CP1E.
The subroutine program must be modified to the interrupt task.

(1) PLC Setup

When the model is changed from the CPM2A to the CP1E, the PLC Setup is not converted.
Enter the settings for the interrupt input to be used from the PLC Setup.

(2)Changing the instruction for permitting interrupts

The CPM2A permits (enables) interrupt inputs with the INT instruction, but the CP1E with the MSKS instruction.

Note 1. When the model is changed, an error is output because the CP1E does not support the INT instruction.

Note 2. Specify the interrupt when the input turns ON, because the CP1E has two methods to execute the interrupt: when the input turns ON or when it turns OFF.
In the CPM2A, the interrupt is executed only when the input turns ON.

Note 3. Refer to the Instructions Reference Manuals for details of the instructions.

(3) Changing the interrupt ladder program

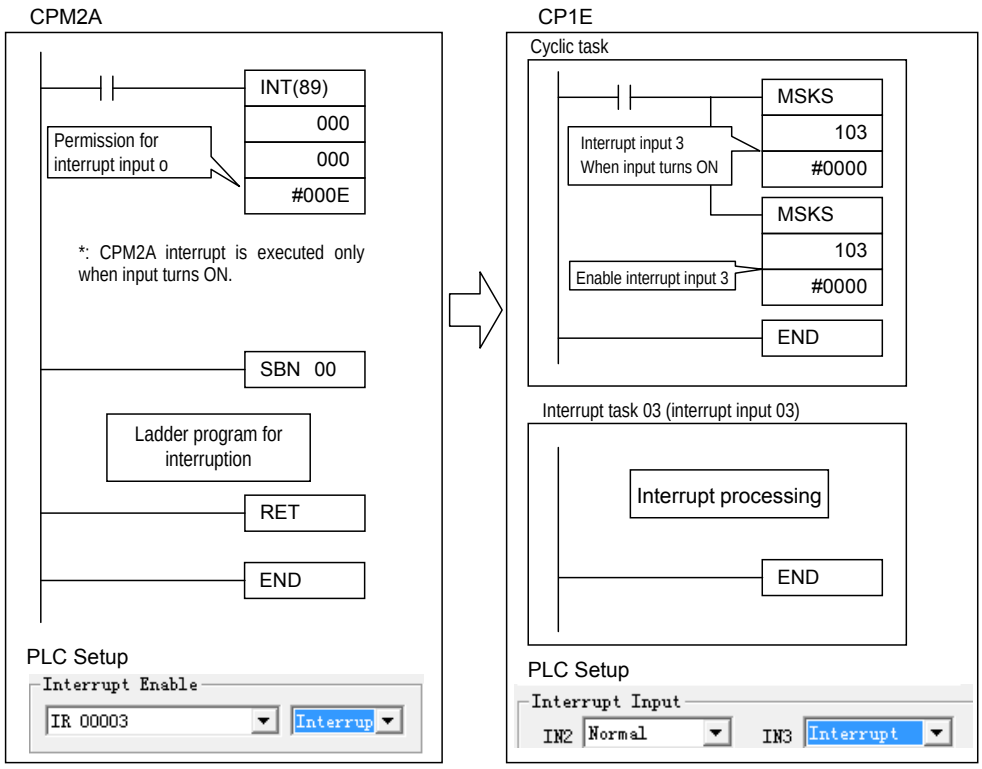
The ladder program of the CPM2A that is executed by the interrupt input is written between the subroutine instructions (between SBN and RET).
Copy the interrupt program in the cyclic task and paste it onto the interrupt task after changing the model to the CP1E.

Note 1. Allocate the task type when creating an interrupt task. If the task type is not allocated, the ladder program in the interrupt task is not checked by ***compile*** on the CX-Programmer.

Inputs, subroutine numbers, and interrupt task numbers

CIO	CPM2A	CP1E
0.02	-	Interrupt input 2 (Interrupt task 02)
0.03	Interrupt input 0 (Subroutine number 0)	Interrupt input 3 (Interrupt task 03)
0.04	Interrupt input 1 (Subroutine number 01)	Interrupt input 4 (Interrupt task 04)
0.05	Interrupt input 2 (Subroutine number 02)	Interrupt input 5 (Interrupt task 05)
0.06	Interrupt input 3 (Subroutine number 03)	Interrupt input 6 (Interrupt task 06)
0.07	-	Interrupt input 7 (Interrupt task 07)

Example: Changing the CPM2A "0.03: Interrupt input 0" to the CP1E "0.03: Interrupt input 3"



3.9. Converting when quick-response input is used

When the quick-response input is used, it is necessary to change the PLC Setup settings.

(1) PLC Setup

When the model is changed from the CPM2A to the CP1E, the PLC Setup is not converted.
Enter the settings for the quick-response input to be used from the PLC Setup.

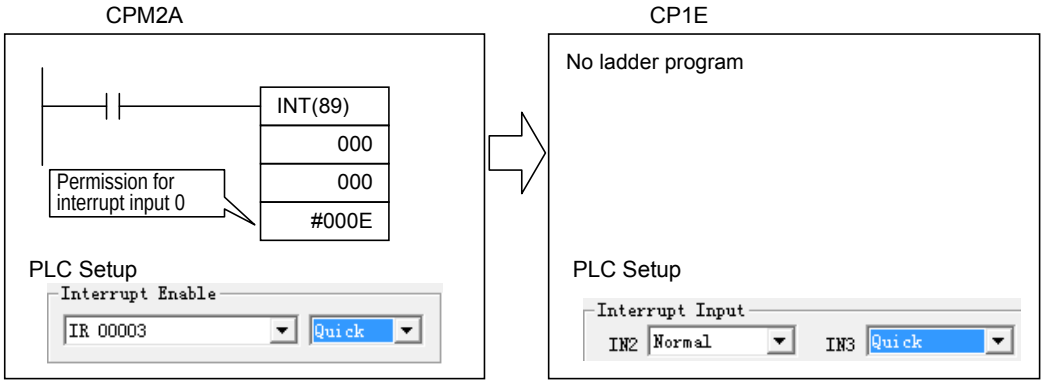
(2) Changing the instruction for permitting interrupts

The CPM2A permits (enables) quick-response inputs with the INT instruction, but the CP1E cannot permit with any instruction. Delete the INT instruction after changing the model.

Note 1. When the model is changed, an error is output because the CP1E does not support the INT instruction.

Note 2. The PLC Setup of the CP1E enables after the power supply is turned ON.

Example: Changing the CPM2A "0.03: Quick-response input 0" to theCP1E "0.03: Quick-response input 3"



3.10. Converting when high-speed counter is used

As for the high-speed counter, "up/down mode" and "incremental mode" of the CPM2A correspond to "differential phase input" and "increment pulse input" of the CP1E.

Comparison of high-speed counter specifications

Item	CPM2A	CP1E
Input mode	Differential phase (differential phase inputs (x4))	Differential phase inputs (differential phase inputs (x4))
	Pulse + direction	Pulse + direction
	Up/down pulse	Up/down pulse inputs
	Incremental pulse inputs	Incremental pulse inputs
Counting mode	Linear mode only	Linear mode
		Ring mode
Count values	Linear mode only Up/down mode: -8388608 to +8388607 Incremental mode: 0 to +16777215	Linear mode 80000000 to 7FFFFFFF Hex Ring mode 00000000 to Ring SV
Control method	Target matching: Up to 16 target values Range comparison: Up to 8 target values	Target matching: Up to 6 target values Range comparison: Up to 6 target values *1
Input frequency	Differential phase mode: 5kHz max.	Differential phase input: N-type 50kHz max. E-type 5kHz max.
	Pulse + direction, up/down, and Incremental mode: 20kHz max.	Increment pulse input: N-type 100kHz max. E-type 10kHz max.
Reset method	Phase Z + software reset Software reset *2	Phase Z + software reset Software reset *3

*1. Examine to reduce to six or less target values on the system or to change to a high-end model such as the CP1L when seven or more target values are set in the CPM2A.
*2. The comparison operation is always being executed.
*3. The comparison operation can be set to be being executed or stopped.

(1) PLC Setup

When the model is changed from the CPM2A to the CP1E, the PLC Setup is not converted.
Enter the settings for the high-speed counter from the PLC Setup.

(2) Changing the comparison table of the high-speed counter comparison instruction (CTBL instruction)

Although the specifications of the CTBL instructions of the CPM2A and CP1E are same, the data formats of the comparison tables are different.
It is necessary to change target values of comparison tables (change from BCD to BIN) and to change from subroutine numbers to interrupt task numbers.
Note. If the task type is not allocated, the ladder program in the interrupt task is not checked by ***compile*** on the CX-Programmer. Allocate the task type and check the program.

Target value comparison table

Item	CPM2A	CP1E
S	Number of target values	Number of target values
S+1 to S+2	Lower word of target value: BCD	Lower word of target value: BIN
S+3 to S+4	Upper word of target value: BCD	Upper word of target value: BIN
S+5	Subroutine number	Interrupt task number

Range comparison table

Item	CPM2A	CP1E
S to S +1	Lower word of target value: BCD	Lower word of target value: BIN
S +2 to S +3	Upper word of target value: BCD	Upper word of target value: BIN
S +4	Subroutine number	Interrupt task number

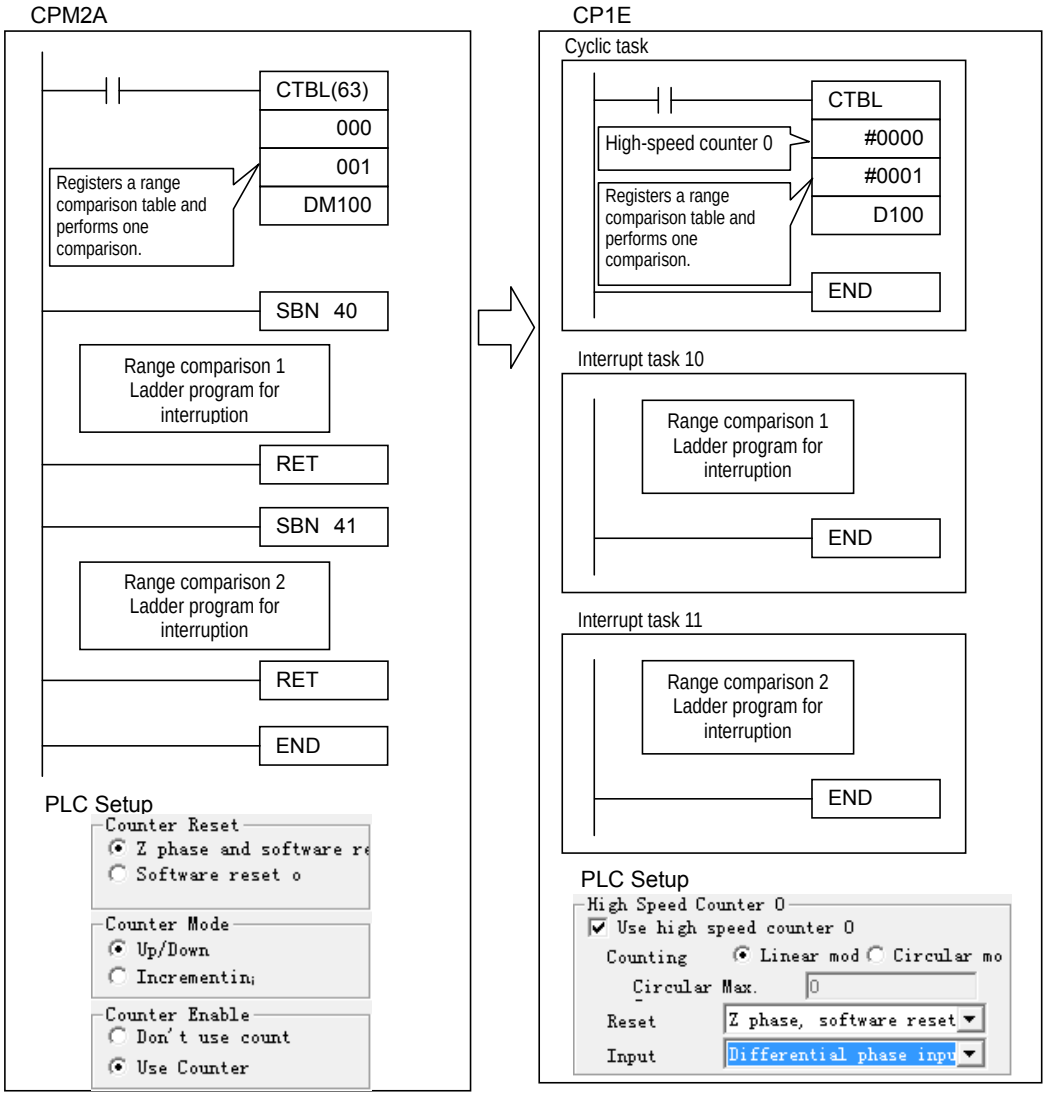
(3) Changing the ladder program for interrupt processing

The ladder program for interrupt processing of the CPM2A is written between the subroutine instructions (between SBN and RET).

Copy the interrupt processing program in the cyclic task and paste it onto the interrupt task after changing the model to the CP1E.

Example

Change the CPM2A “up/down mode: registers a range comparison table and performs one comparison” to the CP1E “up/down phase input: registers a range comparison table and performs one comparison”. Two comparison tables are "1500 to 3000" and "14500 to 16000".



DM setting for CTBL instruction

DM100	1500	Comparison table 1
DM101	0000	Lower word
DM102	3000	Comparison table 1
DM103	0000	Upper word
DM104	0040	Subroutine number
DM105	4500	Comparison table 2
DM106	0001	Lower word
DM107	6000	Comparison table 2
DM108	0001	Upper word
DM109	0041	Subroutine number

DM setting for CTBL instruction

D100	#05DC	Comparison table 1
D101	#0000	Lower word 1500(5DC Hex)
D102	#0BB8	Comparison table 1
D103	#0000	Upper word 3000(BB8 Hex)
D104	#000A	Interrupt task number No.10(A Hex)
D105	#38A4	Comparison table 2
D106	#0000	Lower word 14500(38A4Hex)
D107	#3E80	Comparison table 2
D108	#0000	Upper word 16000(3E80 Hex)
D109	#000B	Interrupt task number No.11(B Hex)

4. Transferring data

Transfer the program, settings, and data that had been converted and modified in Section 3 to the CP1E CPU Unit via the peripheral USB port.

5. Precaution

- When the input device such as a Touch Panel is connected, the words used in the Programmable Terminal might not be within the range of the I/O memory area of the CP1E. It is necessary to change the settings of the Touch Panel as well as the ladder program.

Appendix 1. Specification and performance comparison between CPM2A and CP1E

- Performance specifications

Item		CPM2A	CP1E E-type	CP1E N-type
Maximum number of I/O points		20 to 120 points	10 to 180 points	
Number of Expansion Units connected		20, 30, 40 and 60-point type: 3 units	10, 14 and 20-point type: None 30, 40 and 60-point type: 3 units	
Power supply		AC power supply models: 100 to 240VAC Operating voltage range: 85 to 264VAC Power consumption: 60VA max. DC power supply models: 24 VDC Operating voltage range: 20.4 to 26.4VDC Power consumption: 20W max.	AC power supply models: 100 to 240VAC Operating voltage range: 85 to 264VAC Power consumption 10, 14 , 20-point type: 15VA max./100VAC, 25VA max./ 240VAC 30, 40, 60-point type: 50VA max./100VAC, 70VA max./240VAC DC power supply models: 24VDC Operating voltage range: 20.4 to 26.4VDC Power consumption 10-point type: 9W max., 14, 20-point type: 13W max. 30, 40, 60-point type: 20W max.	
Output type		Relay or transistor outputs	Relay or transistor outputs	
Terminal block		Detachable	Fixed	
External power supply		AC power supply models only 300mA	AC power supply models only 30/40/60-point CPU Unit: 300mA 10/14/20-point CPU Unit: None	
Program capacity (External specification. Add 1K step for internal specification)		4K words not including comments, symbol table, and program indices	2K steps including comments, symbol table, and program indices	8K steps including comments, symbol table, and program indices
DM Area capacity		2K words	2K words D0 to D1499 can be backed up to EEPROM.	8K words D0 to D6999 can be backed up to EEPROM.
Program language		Ladder diagram only	Ladder diagram only	
Function block		Not provided	Not provided	
SFC		Not provided	Not provided	
Instructions		Approximately 120 instructions	Approximately 200 instructions	
Instruction execution time		LD: 0.64μs, MOV: 7.8μs	LD: 1.19μs, MOV: 7.9μs	
High-speed counter input				
	Mode	Incremental pulse, up/down, pulse + direction inputs: 20kHz x 1 counter or Differential phase inputs (x4): 5kHz x 1counter	Up/down, pulse + direction inputs: 10kHz x 2 counters or Differential phase inputs (x4): 5kHz x 2 counters or Incremental pulse inputs: 10kHz x 6 counters Note. 10kHz x 5 counters for 10-point CPU Unit	Up/down inputs: 100kHz x 1 counter, 10kHz x 1 counter or Pulse + direction inputs: 100kHz x 2 counters or Differential phase inputs (x4): 50kHz x 1 counter, 5kHz x 1 counter or Incremental pulse inputs: 100kHz x 2 counters, 10kHz x 4 counters
	Control method	Target matching/ Range comparison	Target matching/Range comparison	
Quick-response inputs		4 inputs	6 inputs (4 inputs only for 10 I/O inputs)	
Input interrupts		4 inputs Direct mode or counter mode	6 inputs (4 inputs only for 10 I/O inputs) Direct mode only	

Item		CPM2A	CP1E E-type	CP1E N-type
Pulse outputs	Pulse output method	Pulse+direction mode, CW/CCW	Pulse output function not included	Pulse + direction mode only
	Speed control	Included		Included
	Positioning	Included		Included
	S-curve acceleration and deceleration	Not included		Not included
	Origin searches	Not included		Included
PWM outputs		2 outputs	Not included	1 output
DIP switch on front panel (SW)		Communications setup	None	
Analog adjusters		2 adjusters	2 adjusters	
Peripheral port		C-series peripheral port	USB2.0 Full-speed(12M)	
Programming Console		Can be connected	Cannot be connected	
Built-in serial communication port		RS-232C	None	RS-232C
Serial option port		None	None	14/20-point CPU unit: None 30/40/60-point CPU Unit: 1 port
Serial communication protocols				
	Baud rate	1200/2400/4800/9600/19.2k	No communication port	1200/2400/4800/9600/ 19.2k/38.4k/57.6k/115.2k
	Compatible protocols	Built-in RS-232C and peripheral ports can be used for Host Link No-protocol mode Only built-in RS-232C port can be used for NT Link (1:1) 1:1 link (master) 1:1 link (slave) Only peripheral port can be used for Peripheral bus Refreshed at once when PLC Setup is changed. Can be changed with STUP instruction.		Host Link No-protocol mode NT Link (1:N) *1 *2 Serial PLC Links (master) *3 Serial PLC Links (slave) Modbus-RTU Refreshed for power interruption after PLC Setup has been changed.
Mountable Option Boards		Option Board cannot be mounted. The followings can be connected to peripheral port: RS-232C Adapter CPM1-CIF01 RS-422A Adapter CPM1-CIF11	Option Board cannot be mounted.	RS-232C Option Board CP1W-CIF01 RS-422A/485 Option Board CP1W-CIF11/12 Ethernet Option Board CP1W-CIF41 The followings cannot be mounted: LCD Option Board CP1W-DAM01
Battery		Built-in battery	None Battery cannot be mounted.	None Optional battery (CP1W-BAT01) can be mounted.
Capacitor backup		5 minutes (at ambient temperature of 25°C)	50 hours (at ambient temperature of 25°C)	40 hours (at ambient temperature of 25°C)

*1. Only one PT can be connected.

*2. PT programming console is not supported.

*3. PTs participation is not possible.

Item	CPM2A	CP1E E-type	CP1E N-type
Nonvolatile memory (Backup memory)	Built-in flash memory (contains user programs, parameters, DM Area initial values and comment files)	Built-in EEPROM (contains user programs, parameters, DM Area initial values and comment files)	
Backup function of DM Area to nonvolatile memory (The function to retain I/O memory data in battery-free operation)	Initial values in DM 6144 to DM 6599 can be changed from Programming Device. They cannot be overwritten from program during operation.	Any specified data (from D0) of DM Area can be backed up to backup memory by using Auxiliary Area control bits. Data can be restored to DM Area automatically when power is turned ON for settings in PLC Setup. Data that can be backed up E-type: D0 to D1499 (max.) N-type: D0 to D6999 (max.)	
Trace memory	Not included	Not included	
Clock (RTC)	Included	Not included	Included
Address offsets	Not included	Included	
Number of cyclic tasks	1	1	
Number of interrupt tasks	None	16	
Number of subroutine	49	128	
Jump numbers	49	128	
Scheduled interrupt	1 Time unit: 0.1ms	1 Time unit: Only 0.1ms Interrupt intervals are fixed when MSKS instruction is executed. Only reset/start can be executed by MSKS instruction.	

♦ I/O memory

Item	CPM2A	CP1E E-type	CP1E N-type
CIO	320 bits CIO0.00 to CIO19.15 Input bits: Starting from CIO0.00 Output bits: Starting from CIO10.00	4640 bits CIO0.00 to CIO289.00 Input bits: Starting from CIO0.00 Output bits: Starting from CIO100.00	
Work Area (WR)	928 bits CIO20.00 to CIO49.15, CIO200.00 to CIO227.15	1600 bits W0.00 to W99.15	
Link Area(LR)	256 bits LR0.00 to LR15.15	None (Serial PLC Link Words: CIO200.00 to 289.15)	
Temporary relay Area	8 bits TR0 to TR7	16 bits TR0 to TR15	
Holding Area (HR)	320 bits H0.00 to H19.15	800 bits H0.00 to H49.15	
Auxiliary Area (AR) Special Area (CPM2A only)	Special Area 448 bits SR228.00 to SR255.15 Auxiliary area 384 bits A00.00 to A23.15	Auxiliary area Read only: 7168 bits A0 to A447 Read/write: 4896 bits A448 to A753	
Timer Area	256 timer numbers T0 to T255 (Using same number as counters)	256 timer numbers T0 to T255	
Counter Area	256 counter numbers C0 to C255 (Using same number as timers)	256 counter numbers C0 to C255	
Data Memory Area	2K words DM0 to 2047: Read/Write DM2000 to 2021: Error Log Area D6144 to 6599: Read-only D6600 to6655: PLC Setup	2K words D0 to D2047 (D0 to D1499 can be backed up to EEPROM by using Auxiliary Area control bits. Data is restored to RAM when power is turned ON for settings in PLC Setup.)	8K words D0 to D8191 (D0 to D6999 can be backed up to EEPROM by using Auxiliary Area control bits. Data is restored to RAM when power is turned ON for settings in PLC Setup.)
Task Flag Area	None	1	
Index registers (IR)	None	None	
Data registers (DR)	None	None	
Trace memory	None	None	

Appendix 2. Changes in Special Area

Name	CPM2A Special Area	CP1E Auxiliary Area
Pulse output PV 0 rightmost	228	A276
Pulse output PV 0 leftmost	229	A277
Pulse output PV 1 rightmost	230	A278
Pulse output PV 1 leftmost	231	A279
Macro function input area	232 to 235	None
Macro function output area	236 to 239	None
Input interrupt 3 counter mode SV	240	None
Input interrupt 4 counter mode SV	241	None
Input interrupt 5 counter mode SV	242	None
Input interrupt 6 counter mode SV	243	None
Input interrupt 3 counter mode PV	244	None
Input interrupt 4 counter mode PV	245	None
Input interrupt 5 counter mode PV	246	None
Input interrupt 6 counter mode PV	247	None
High-speed counter PV area	248 to 249	A270 to A271
Analog setting 0	250	A642
Analog setting 1	251	A643
High-speed counter reset bit	252.00	A531.00
Pulse output 0 PV Reset Bit	252.04	A540.00
Pulse output 1 PV Reset Bit	252.05	A541.00
Peripheral port reset bit	252.08	A526.01 (Serial option port restart)
COMM(RS-232C) port reset bit	252.09	A526.00
PLC Setup reset bit	252.10	None
Forced status hold bit	252.11	A500.13
IOM hold bit	252.12	A500.12
Error log reset bit	252.14	A500.14
Error code	253.00 to 07	A400
Battery error flag	253.08	A402.04
Cycle time overrun flag	253.09	A401.08
Changing COMM (RS-232C) port setup flag	253.12	None
Always ON flag	253.13	P_On
Always OFF flag	253.14	P_Off
First cycle flag	253.15	A200.11
1-minute clock pulse	254.00	P_1min
0.02-second clock pulse	254.01	P_0_02s
Negative flag	254.02	P_N
Overflow flag	254.04	None
Underflow flag	254.05	None
Differential monitor complete flag	254.06	A508.09
STEP execution flag	254.07	A200.12
0.1-second clock pulse	255.00	P_0_1s
0.2-second clock pulse	255.01	P_0_2s
1.0-second clock pulse	255.02	P_1s
Instruction execution error (ER) flag	255.03	P_ER
Carry (CY) flag	255.04	P_CY
Greater than flag	255.05	P_GT
Equals flag	255.06	P_EQ
Less than flag	255.07	P_LT

Appendix 3. Changes in Auxiliary Area

Name	CPM2A Auxiliary Area	CP1E Auxiliary Area
Expansion Unit error flag for 1st Unit	AR02.00	A436.00
Expansion Unit error flag for 2nd Unit	AR02.01	A436.01
Expansion Unit error flag for 3rd Unit	AR02.02	A436.02
Number of Expansion Units connected	AR02.08 to 11	A437
COMM port error code	AR08.00 to 03	None
COMM port communications error flag	AR08.04	A392.04
COMM port transmit ready flag	AR08.05	A392.05
COMM port reception completed flag	AR08.06	A392.06
COMM port reception overflow fag	AR08.07	A392.07
Peripheral port error code	AR08.08 to 11	None
Peripheral port communications error flag	AR08.12	A392.12
Peripheral port transmit ready flag	AR08.13	A392.13
Peripheral port reception completed flag	AR08.14	A392.14
Peripheral port reception overflow flag	AR08.15	A392.15
COMM port reception counter	AR09	A393
Peripheral port reception counter	AR10	A394
Range comparison flags	AR11.00 to 07	A274.00 to 05
High-speed counter comparison operation	AR11.08	A274.08
High-speed counter PV overflow/underflow flag	AR11.09	A274.09
Pulse output 0 output status	AR11.11	A280.00
Pulse output 0 overflow/underflow flag	AR11.12	A280.01
Pulse output 0 pulse quantity set flag	AR11.13	A280.02
Pulse output 0 pulse output completed flag	AR11.14	A280.03
Pulse output 0 output status	AR11.15	A280.04
Pulse output 1 overflow/underflow flag	AR12.12	A281.01
Pulse output 1 pulse quantity set flag	AR12.13	A281.02
Pulse output 1 pulse output completed flag	AR12.14	A281.03
Pulse output 1 output status	AR12.15	A281.04
Power-up PLC Setup error flag	AR13.00	A402.10
Start-up PLC Setup error flag	AR13.01	A402.10
RUN PLC Setup error flag	AR13.02	A402.10
Long cycle time flag	AR13.05	A401.08
UM Area specification error flag	AR13.08	None
FROM error flag	AR13.09	A315.15
Read-only DM error flag	AR13.10	None
PLC Setup error flag	AR13.11	A402.10
Program error flag	AR13.12	A401.15/A401.09
Expansion instruction area error flag	AR13.13	None
Data save error flag	AR13.14	None
Maximum cycle time	AR14	A262 to A263
Current cycle time	AR15	A264 to A265
Minute, hour	AR17	None
Second, minute	AR18	A351
Hour, day of the month	AR19	A352
Month, year	AR20	A353
Day of the week	AR21.00 to 07	A354.00 to 07
30-second compensation bit	AR21.13	None
Clock stop bit	AR21.14	None
Clock set bit	AR21.15	None
Power-off counter	AR23	A514

Appendix 4. Instructions changed by replacing CPM2A with CP1E

Instruction		CPM2A	CP1E	Result of instruction conversion and measure
Shift instruction	ASYNCHRONOUS SHIFT REGISTER	ASFT	None	Displayed as error. As CP1E does not have alternative instruction, we recommend you to use CPIL/CP1H.
Increment /decrement instructions	INCREMENT	INC	++B	Converted
	DECREMENT	DEC	--B	Converted
Calculation instructions	BCD ADD	ADD	+BC	Converted
	BCD SUBTRACT	SUB	-BC	Converted
	BCD MULTIPLY	MUL	*B	Converted
	BCD DIVIDE	DIV	/B	Converted
	BINARY ADD	ADB	+C	Converted
	BINARY SUBTRACT	SBB	-C	Converted
	BINARY MULTIPLY	MLB	None SIGNED BINARY MULTIPLY: *	Displayed as error. Use SIGNED BINARY MULTIPLY instead.
	BINARY DIVIDE	DVB	None SIGNED BINARY DIVIDE: /	Displayed as error Use SIGNED BINARY DIVIDE instead.
	DOUBLE BCD ADD	ADDL	+BCL	Converted
	DOUBLE BCD SUBTRACT	SUBL	-BCL	Converted
	DOUBLE BCD MULTIPLY	MULL	*BL	Converted
	DOUBLE BCD DIVIDE	DIVL	/BL	Converted
Conversion instructions	HOURS-TO-SECONDS	SEC	None	Displayed as error. Although CP1E does not have alternative instruction to replace, CADD/CSUB instructions can add and subtract time.
	SECONDS-TO-HOURS	HMS	None	
Special math instructions	SUM	SUM	None	Displayed as error. As CP1E does not have alternative instruction to replace, we recommend you to use CPIL/CP1H.
	DATA SEARCH	SRCH	None	
	FIND MAXIMUM	MAX	None	
	FIND MINIMUM	MIN	None	
Logic instruction	EXCLUSIVE NOR	XNRW	None (XORW+COM)	Displayed as error. Use combination of XORW instruction and COM instruction instead.
Subroutine instruction	MACRO	MCRO	None	Displayed as error. As CP1E does not have alternative instruction, change ladder program with multiple subroutines.
Interrupt control instructions	INTERVAL TIMER	STIM	MSKS	Displayed as error. Use MSKS instruction instead.
	INTERRUPT CONTROL	INT	MSKS	Displayed as error. Use MSKS instruction instead.
Pulse output instruction	SYNCHRONIZED PULSE CONTROL	SYNC	None	Displayed as error. CP1E does not have alternative instruction because Programming Console cannot be used. We recommend you to use CP1W-DAM01.

Instruction		CPM2A	CP1E	Result of instruction conversion and measure
Communications instruction	CHANGE RS-232C SETUP	STUP	None	Displayed as error. CP1E does not have instruction to change communication setting when executing instructions. We recommend you to use CPIL/CP1H.
Special instruction	MESSAGE DISPLAY	MSG	None	Displayed as error. CP1E does not have alternative instruction because Programming Console cannot be used. We recommend you to use CP1W-DAM01.

Appendix 5. Instruction specifications changed by replacing CPM2A with CP1E

Instruction	Mnemonic	Operand number	CPM2A	CP1E	Modification after converting with CX-Programmer
SINGLE WORD DISTRIBUTE	DIST	3	C: Control word • C is BCD data when using for single-word distribution.	Of: Offset • Of is BIN data • No stack operation	• Change Of from BCD data to BIN data when using for single-word distribution. • Stack operation can not be converted because CP1E does not have this function.
DATA COLLECT	COLL	2	C: Control word • C is BCD data when using for data collection.	Of: Offset • Of is BIN data. • No stack operation.	• Change Of to BIN data when using for data collection. • Stack operation can not be converted because CP1E does not have this function.
WORD SHIFT	WSFT	1	St: Starting word	S: Source word S is store in St.	Although &0 data is input in S: Source word, operation is the same as CPM2A.
		2	E: End word	St: Starting word	
		3	-	E: End word	
2'S COMPLEMENT	NEG	3	Third operand is ignored.	No third operand	Converted and no need to modify.
FRAME CHECKSUM	FCS	1	C: Control data (1 word) Specify table length in 0 to 11 bit with BCD data.	C: First control words (2 words) Specify table length in C with BIN data and setting value in C+1.	Modify control words.
SPEED OUTPUT	SPED	1	Single-phase pulse output	Pulse + direction only. Single-phase output cannot be specified.	Specify pulse output port and mode to be used.
		2	M: Output mode Output method and direction are not specified.	M: Output mode Output method and direction must be specified.	
		3	F: Target frequency Set BCD value in 10Hz.	F: Target frequency Set BIN value in Hz.	It is necessary to convert unit of target frequency and convert BCD data into BIN data.
SET PULSES	PULS	1	Single-phase output specified for pulse output 1	Single-phase output cannot be specified for pulse output 1, pulse + direction only	Specify pulse output port and mode to be used.
		2	Pulse output 0：000 Pulse output 1：010	Pulse output 0：#0000 Pulse output 1：#0001	
		3	When specifying word, contents of word are BCD data	When specifying word, contents of word are BIN data	Change pulse output amount from BCD data to BIN data.
			When specifying constant, BCD data	When specifying constant, BIN data	
PULSE WITH VARIABLE DUTY RATIO	PWM	1	Pulse output 0：000 Pulse output 1：010	PWM output 0： Resolution	Specify pulse output port and mode to be used.
		2	Frequency BCD data Set in 0.1Hz	Frequency BIN data Set in 0.1Hz or 1Hz	It is necessary to convert unit of frequency and convert BCD data into BIN data.
		3	Duty ratio BCD data Set in 1%	Duty ratio BIN data Set in 0.1%	It is necessary to convert unit of duty ratio and convert BCD data into BIN data.
ACCELERATION CONTROL	ACC	1	Port specifier	Port specifier	Specify pulse output port and mode to be used, and change settings depending on operation of system.
		2	Mode specifier	C2: Control word	
		3	Set acceleration/ deceleration rate and starting/target frequency	Set acceleration/ deceleration rate and target frequency	

Instruction	Mnemonic	Operand number	CPM2A	CP1E	Modification after converting with CX-Programmer
FAILURE ALARM	FAL	2	No second operand	Specify message word with second operand.	Second operand is converted to #0 data (no message).
SEVERE FAILURE ALARM	FALS	2	No second operand	Specify message word with second operand.	Second operand is converted to #0 data (no message).

Appendix 6. PLC Setup changed by replacing CPM2A with CP1E

It is necessary to set because the PLC Setup is not converted even if the model is changed.

CPM2A			CP1E		
Function	Item		Function	Item	
Startup processing	Startup mode	PROGRAM	Startup	Startup mode	PROGRAM
		MONITOR			MONITOR
		RUN			RUN
		Continue operating mode last used before power was turned OFF.			None
		Programming Console switch			None
	IOM hold	Reset/Maintain		None	None
	Forced status	Reset/Maintain		None	None
	Programming Console display language	Japanese		-	Programming Console cannot be connected.
	Expansion instruction	Default settings/ User assignments			None
	Program memory write-protection	Unprotected/Protected			Transition from PLC Setup. Various protections available.
	If data could not be saved with built-in capacitor	Memory error will be generated.			Clear held memory to zero when power is turned ON.
Cycle time	Cycle monitor timer	Disable: fixed at 120ms Setting: 99s max. Monitor time= setting x unit Setting unit: 10ms/ 100ms/1s	Timing/ Interrupt	Watch cycle time	Default: 1000ms Any value can be set.
	Cycle time	Default: Variable Others: Minimum time		Constant cycle time	Default: Variable Other: Any value can be set.
	Servicing time for peripheral port	Peripheral port	Service for peripheral port	None	None
		RS-232C port(no-protocol)			
Interruption/ Refreshing	Interrupt input	IR 00003 to 6	Built-in input	Interrupt input	IN2 to 7
	Input constant	IR 000 to 0009 IN0ch is set every 2bits. 1/2/3/5/10/20/40ms	Input constant	Input constant (0 to 17CH)	0 to 17CH All words including IN0ch are set at the same time. No filter/1/2/4/8/16/32ms
	Pulse output 0	Relative/Absolute	Pulse output 0	Base setting	Undefined Origin Hold/ Undefined
	Pulse output 1	Relative/Absolute	Pulse output 1	Base setting	Undefined Origin Hold/ Undefined
Host Link port	Communications setting	Standard	Built-in RS-232C	Communications setting	Standard
		Custom			Custom
	Baud rate	1200 to 19.2kbps		Baud rate	1200 to 115.2kbps
	Mode	Host Link		Mode	Host Link
		RS-232C (no-protocol)			RS-232C (no-protocol)
		1:1 Serial PLC Link (slave)			Serial PLC Link (slave)
		1:1 Serial PLC Link (master)			Serial PLC Link (master)
		NT Link (1:1)			NT Link (1:N)
	Link words	LR00 to LR15		-	No setting (fixed value)
	Start code	Disable/Enable		Start code	Disable/Set
	End code	Received bytes / CR,CF/ Set end code		End code	Received bytes / CR,CF/ Set end code
	CS control	Disable/Enable		-	Transition from PLC Setup. CS control setting is included in RXD instruction.
	Node number	0 to 31		Unit number	0 to 31
	Delay	0 to 9999ms		Delay	0 to 9999ms

CPM2A			CP1E		
Function	Item		Function	Item	
Peripheral port	Communications setting	Standard/Custom	Serial Option Port 1	Communications setting	Standard/Custom
	Mode	Host Link/ RS-232C (no-protocol)		Mode	Host Link/ RS-232C (no-protocol)
	Start code	Disable/Enable		Start code	Disable/Set
	End code	Bytes to receive/ CR,CF/ End code setting		End code	Bytes to receive/ CR,CF/ End code setting
	Node number	0 to 31		Unit number	0 to 31
	Delay	0 to 9999ms		Delay	0 to 9999ms
Error log setting	Cycle time monitor	Detect (non-fatal error) / Not detect	Timing/ interrupt	Watch cycle time	Check/Not check
				Cycle time	Check/Not check
	Style	Shift after 7 records has been stored / Store only first 7 records / Not store	-	-	No setting 20 records (fixed)
	Low battery error	Detect (non-fatal error) / Not detect	CPU Unit setting	Execute process	“Do not detect low battery (battery-free operation)” blank
High-speed counter	Counter reset	Z phase + software reset Software reset only	Built-in input	High-speed counter 0	Select reset method.
	High-speed counter/ Synchronized pulse control	Not use/ Use as high-speed counters			Check "Use". *1
	Counter mode	Differential phase mode (5kHz)			Differential phase input (x4)
		Pulse + direction input mode (20kHz)			Pulse + direction input
		Up/down input mode (20kHz)			Up/Down pulse input
		Increment mode (20kHz)			Increment pulse input

Shaded item: Specification of setting item is changed.

*1. There is no synchronized pulse control.

Appendix 7. Expansion Units

Model numbers of the Expansion Units when replacing the CPM2A with the CP1E

	CPM1A Expansion Unit	CP1W Expansion Unit	When replacement model does not exist
I/O Unit with 20 I/O points	CPM1A-20EDR1	CP1W-20EDR1	
	CPM1A-20EDT	CP1W-20EDT	
	CPM1A-20EDT1	CP1W-20EDT1	
Input Unit with 8 inputs Output Unit with 8 outputs	CPM1A-8ED	CP1W-8ED	
	CPM1A-8ET	CP1W-8ET	
	CPM1A-8ET1	CP1W-8ET1	
Analog Input Unit	CPM1A-AD041	CP1W-AD041	
Analog Output Unit Analog I/O Unit	CPM1A-DA041	CP1W-DA041	
	CPM1A-MAD01	None	Replace with CP1W-MAD11.
	CPM1A-MAD11	CP1W-MAD11	
CompoBus/S I/O Link Unit	CPM1A-SRT21	CP1W-SRT21	
DeviceNet I/O Link Unit Temperature Sensor Unit	CPM1A-DRT21	None	There is no Unit to replace. Please examine to replace DeviceNet with Compobus/S or replace PLC with another PLC that can be used with DeviceNet.
	CPM1A-TS001	CP1W-TS001	
	CPM1A-TS002	CP1W-TS002	
	CPM1A-TS101	CP1W-TS101	
	CPM1A-TS102	CP1W-TS102	

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